

**Curriculum Vitae – Phillip B. Danielson**  
**UNIVERSITY OF DENVER**  
**DEPARTMENT OF BIOLOGICAL SCIENCES**

**Background Summary:** Professor Phillip Danielson, has over 24 years of experience in molecular genetic analysis of biological samples. His experience includes research in forensic genetics and review of forensic casework. He has administered over \$3.9 million in research grant funding from the National Institute of Justice, the National Science Foundation, the Department of Defense, the National Center for Missing and Exploited Children, the National Institutes of Health and the University of Denver. Dr. Danielson is a member of the International Society for Forensic Genetics and serves on the Organization of Scientific Area Committees for Biology and DNA which promulgates standards for the US forensic community. He is an active contributor to the professional literature and has had productive research, training and/or academic relationships with the Denver Police Department, the Colorado District Attorneys Council, the National Law Enforcement and Corrections Technology Center (Rocky Mountain Region) and numerous other law enforcement agencies throughout the United States.

**A. Professional Preparation:**

Metropolitan State College, Colorado	Biology,	B.S.	1983
University of Denver, Colorado	Biology,	Ph.D.	1996

**B. Appointments:**

2014-Present	National Institute of Standards, Organization of Scientific Area Committees (Biology/DNA Committee Member)
2014-Present	Rape Kit Advisory Board Member, NMS Labs, Willow Grove, PA
2014-Present	Fellow of the Foundation, Center for Forensic Science Research and Education, Willow Grove, PA
2011-Present	Science Advisor, NMS Labs, Willow Grove, PA
2010-Present	President, ForSci Associates LLC, Denver Colorado
2007-Present	Full Professor, Department of Biological Sciences, Adjunct Professor, Sturm College of Law, University of Denver, Denver, CO
2004-2010	Science Advisor, National Law Enforcement and Corrections Technology Center, Rocky Mountain Region
2004-2007	Associate Professor, Department of Biological Sciences, University of Denver, Denver, CO
1997-2003	Assistant Professor, Department of Biological Sciences, University of Denver, Denver, CO
1996-97	Post-Doctoral Research Associate, Department of Biological Sciences, University of Denver, Denver, CO

**C. Publications:**

**Twenty Recent Peer-Reviewed Publications (2001-2016)**

**(31 additional peer-reviewed publications from 1994 to 2001 available on request)**

Legg, K.M., Powell, R., Reisdorph, N., Reisdorph, R. and **Danielson, P.B.** (In Press) Verification of Protein Biomarkers for the Identification of Biological Stains by Quadrupole Time-of-Flight Mass Spectrometry. Electrophoresis.

Patrinos G., **Danielson, P.B.** and Ansorge W. (2016) Molecular Diagnostics: Past, Present, and Future. In: Molecular Diagnostics 3rd Edition (Patrinos G., Ansorge W. and Danielson, P.B. Eds.). Academic Press.

**Danielson, P.B.**, McKiernan H.E. and Legg, K.M. (2016) Integrated PCR Technologies (Sample-to-Answer Technologies). In: Molecular Diagnostics 3rd Edition (Patrinos G., Ansoorge W. and Danielson, P.B. Eds.). Academic Press.

McKiernan H.E. and **Danielson, P.B.** (2016) Molecular Diagnostic Applications in Forensic Science. In: Molecular Diagnostics 3rd Edition (Patrinos G., Ansoorge W. and Danielson, P.B. Eds.). Academic Press.

Legg, K.M. and **Danielson, P.B.** (2016) State of the Art in Forensic Serology. In Liz Fergus (Ed.), *Sexual Assault Victimization Across the Life Span Second Edition Volume 1: Investigation, Diagnosis, and the Multidisciplinary Team*. STM Learning Inc.

Legg, K. M., Powell, R., Reisdorph, N., Reisdorph, R. and **Danielson, P. B.** (2014) Discovery of Highly Specific Protein Markers for the Identification of Biological Stains. *Electrophoresis*. 35(21-22):3069-78.

Komorowski, L.K., Lecaude, S.G., Westring, C.G., **Danielson P.B.** and Does R.M. (2012) Evolution of Gnathostome Prodynorphin and Proenkephalin: Characterization of a Shark Prodynorphin cDNA. *General and Comparative Endocrinology* **177(3): 353-364**.

Kristinsson, R, Lewis, S and **Danielson, P.B.** (2009) Comparative Analysis of the HV1 and HV2 Regions of Human Mitochondrial DNA by Denaturing High-Performance Liquid Chromatography. *Journal of Forensic Sciences* 54(1):28-36

Westring, CG, Kristinsson, R., Gilbert, DM, and **Danielson, P.B.** (2007) Reduced Volume Protocol for Optimized Quantification of Genomic DNA using the Quantifiler™ Human DNA kit. *Journal of Forensic Sciences* 52(5):1035-43

**Danielson, P.B.**, Sun, H-Y, Melton, T., and Kristinsson, R. (2007) Resolving mtDNA Mixtures by Denaturing High-Performance Liquid Chromatography and Linkage Phase Determination. *FSI Genetics* 1:148-153. (invited manuscript)

**Danielson, P.B.** (2005) Mitochondrial DNA Analysis by Denaturing High-Performance Liquid Chromatography for the Characterization and Separation of Mixtures in Forensic Samples. Peer reviewed final research report for electronic release under NIJ cover.

**Danielson, P.B.**, Kristinsson, R., Shelton, R.J. and LaBerge, G.S. (2005) Separating Human DNA Mixtures using Denaturing High-Performance Liquid Chromatography (DHPLC). *Expert Review of Molecular Diagnostics* 5(1):53-63. INVITED REVIEW ARTICLE

**Danielson, P.B.** and Does, R.M. (2004) Evolution of the Opioid/Orphanin Gene Family. In: *The Encyclopedia of Endocrinology and Endocrine Disorders*, (Luciano Martini, Ed.). Harcourt Press. Volume 3 pp. 419-424. INVITED REVIEW ARTICLE

Does, R.M. and Danielson, P.B. (2004) Evolution of ACTH,  $\alpha$ -MSH and POMC. In: *The Encyclopedia of Endocrinology and Endocrine Disorders*, (Ed. Luciano Martini). Harcourt Press Volume 1 pp. 30-34. INVITED REVIEW ARTICLE

Does, R.M., Lecaude, S., Bauer, D. and **Danielson, P.B.** (2004) Analyzing the Evolution of the Opioid/Orphanin Gene Family. *Mass Spectrometry* 21:220-243. INVITED REVIEW ARTICLE

LaBerge, G.S., Shelton, R.J. and **Danielson, P.B.** (2003) Forensic Utility of Mitochondrial DNA Analysis based on Denaturing High-Performance Liquid Chromatography. *Croatian Medical Journal* 44(3):281-288.

**Danielson, P.B.**, LaBerge, G.S. and Shelton, R.J. (2003) Clinical Applications of Denaturing High-Performance Liquid Based-based Genotyping. Croatian Medical Journal 44(4):447-454.

**Danielson, P.B.** (2002) The Cytochrome P450 Superfamily: Biochemistry, Evolution and Drug Metabolism in Humans. Current Drug Metabolism, 3:561-597 INVITED REVIEW ARTICLE

Azadan, R.J., Fogleman, J.C. and **Danielson P.B.** (2002) Capillary Electrophoresis Sequencing: Maximum Read Length at Minimal Cost. BioTechniques 32(1):24-28.

Dores, R.M., Costantino, D., Walnutt, J., **Danielson, P.** and Lecaude, S. (2001) Analyzing the radiation of the proenkephalin gene in tetrapods: Cloning of a *Bombina orientalis* Proenkephalin cDNA. Peptides, 22:2021-2025.

### **31 Published Abstracts (1995-2008)**

### **75 Poster Presentations and Contributed Papers (1995-2013)**

**D. Synergistic Law Enforcement Associated Activities:** (Some of these were in cooperation with staff from the National Law Enforcement and Corrections Technology Center, Rocky Mountain Region, the Denver Police Department, the Denver District Attorney's Office and local law enforcement and emergency response agencies throughout the Rocky Mountain Region)

2014: Boulder Police Department, "Forensic DNA Profiling: The Application of PCR and Gel Electrophoresis to Human Genetic Identity", Boulder, CO.

2013: Boulder Police Department, "Forensic DNA Profiling: The Application of PCR and Gel Electrophoresis to Human Genetic Identity", Boulder, CO.

2009: Boulder Police Department, "Forensic DNA Profiling: The Application of PCR and Gel Electrophoresis to Human Genetic Identity", Boulder, CO.

2009: "Forensic DNA Outreach to the Law Enforcement Community through the National Law Enforcement and Corrections Technology Center" Presentation to Mr. Darek Newby senior member of the U.S. House appropriations. Denver, CO

2008 From Crime Scene to Courtroom: Forensic DNA training for Rape and Murder Investigators. Sponsored by the National Law Enforcement and Corrections Technology Center and the Boulder Police Department, Boulder, CO.

2007 National Law Enforcement and Corrections Technology Center and the Weld County Sheriff's Office, (From Crime Scene to Courtroom Program) "Forensic DNA Profiling: Reducing Major Crimes through Forensic DNA Analysis of Property Crime Evidence", Greeley, CO.

2007 National Law Enforcement and Corrections Technology Center and the Larimer County Sheriff's Office, (From Crime Scene to Courtroom Program) "Forensic DNA Profiling: Reducing Major Crimes through Forensic DNA Analysis of Property Crime Evidence", Fort Collins, CO.

2007 National Law Enforcement and Corrections Technology Center and the Loveland Police Department, (From Crime Scene to Courtroom Program) "Forensic DNA Profiling: Reducing Major Crimes through Forensic DNA Analysis of Property Crime Evidence", Loveland, CO.

- 2007 National Law Enforcement and Corrections Technology Center and the Greeley Police Department, (From Crime Scene to Courtroom Program) "Forensic DNA Profiling: Reducing Major Crimes through Forensic DNA Analysis of Property Crime Evidence", Greeley, CO.
- 2007 From Crime Scene to Courtroom: Forensic DNA training for Rape and Murder Investigators. Sponsored by the National Law Enforcement and Corrections Technology Center and the Boulder Police Department, Boulder, CO.
- 2006 University of Colorado at Denver "Emerging Technologies in Human DNA Profiling Provide Powerful Tools for Criminal Investigations", Police Leadership Program for the Master's in Public Administration. Denver, CO.
- 2006 National Law Enforcement and Corrections Technology Center, "Rapid Mitochondrial DNA Analysis: Progress Report on Collaboration with the National Center for Missing and Exploited Children" Regional Advisory Council Meeting, Denver, CO.
- 2006 Virginia Institute of Forensic Science and Medicine (Present and Future Technological Advances in Human Identification) "mtDNA Mixture Fractionation and Analysis by Denaturing High-Performance Liquid Chromatography", Roanoke, VA.
- 2006 National Forensic Science Technology Center and the National Institute of Justice (Workshop on Mitochondrial DNA Analysis) "Emerging DNA Technologies (DHPLC) for resolving mixtures", Largo, FL.
- 2005 National Law Enforcement and Corrections Technology Center and the Albuquerque Police Department (From Crime Scene to Courtroom Program) "Forensic DNA Profiling: The Application of PCR and Gel Electrophoresis to Human Genetic Identity", Albuquerque, NM.
- 2005 National Law Enforcement and Corrections Technology Center and the Rapid City Police Department, (From Crime Scene to Courtroom Program) "Forensic DNA Profiling: The Application of PCR and Gel Electrophoresis to Human Genetic Identity", Rapid City, SD.
- 2005 National Law Enforcement and Corrections Technology Center and the Boulder Police Department, (From Crime Scene to Courtroom Program) "Forensic DNA Profiling: The Application of PCR and Gel Electrophoresis to Human Genetic Identity", Boulder, CO.
- 2005 University of Colorado at Denver "Emerging Technologies in Human DNA Profiling Provide Powerful Tools for Criminal Investigations", Police Leadership Program for the Master's in Public Administration. Denver, CO.
- 2005 National Law Enforcement and Corrections Technology Center, "Rapid Mitochondrial DNA Analysis: Collaboration with the National Center for Missing and Exploited Children" Regional Advisory Council Meeting, Denver, CO.
- 2005 American Society of Industrial Security, "Biological Terrorism: Facts vs. Myths", Longmont, CO.
- 2005 Colorado Safety Association, "Biological Terrorism: Assessing the Risk", Denver, CO.
- 2005 Colorado Intergovernmental Risk Sharing Agency, "Facts vs. Myths of Biological Terrorism: How Big is the Risk", Vail, CO.
- 2005 National Law Enforcement and Corrections Technology Center and the Texas Association of Property and Evidence Inventory Technicians, "Forensic DNA Profiling: Collecting and Storing Evidence", San Antonio, TX.

- 2004 National Law Enforcement and Corrections Technology Center, Alaska Peace Officers Association, and the Juneau Police Department, (From Crime Scene to Courtroom Program) "Forensic DNA Profiling: The Application of PCR and Gel Electrophoresis to Human Genetic Identity", Juneau, AK
- 2004 National Law Enforcement and Corrections Technology Center and the Denver Police Department, (From Crime Scene to Courtroom Program) "Forensic DNA Profiling: The Application of PCR and Gel Electrophoresis to Human Genetic Identity", Denver, CO.
- 2004 National Law Enforcement and Corrections Technology Center and the Boulder Police Department, (From Crime Scene to Courtroom Program) "Forensic DNA Profiling: The Application of PCR and Gel Electrophoresis to Human Genetic Identity", Boulder, CO.
- 2004 International Bridge, Tunnel, and Turnpike Association, "Bio/Chem/Eco Terrorism: Facts vs. Myths", IBTTA Facilities Management Workshop, Denver, CO.
- 2004 U.S. Attorney's Office, "Bio/Chem/Eco Terrorism: A Guide for First Responders" Law Enforcement Coordinating Committee Conference on Homeland Security. Wichita, KS. Keynote Speaker.
- 2004 FBI National Academy, "Bio/Chem/Eco Terrorism: Facts vs. Myths", Bozeman, MT.
- 2004 National Law Enforcement and Corrections Technology Center, "Rapid Mitochondrial DNA Analysis: Evidence Screening and Separation of Forensic Mixtures", Regional Advisory Council Meeting, Whitefish, MT.
- 2004 National Center for Missing and Exploited Children, "Rapid Mitochondrial DNA Analysis: Evidence Screening and Separation of Forensic Mixtures", Alexandria, VA.
- 2004 Royal Canadian Mounted Police and Transgenomic Corporation, "Forensic Utility of Denaturing High-Performance Liquid Chromatography to Analyses of Human Mitochondrial DNA", Ottawa, Canada.
- 2004 Colorado Crime Analysis Association, "Human DNA Profiling as a Powerful Tool for Criminal Investigations", Denver, CO.
- 2003 National Law Enforcement and Corrections Technology Center and the Colorado State Sheriff's Association (Conference of Under Sheriffs), "Bioterrorism: Facts vs. Myths", Ft. Collins, Colorado.
- 2003 University of Denver, College of Law, "Forensic DNA Profiling: The Interface Between Human Genetic Identity and Scientific Evidence", Denver, CO.
- 2003 Beijing Department of Public Security "Human Mitochondrial DNA Profiling by Denaturing High-Performance Liquid Chromatography", Beijing, Democratic Peoples Republic of China.
- 2003 National Law Enforcement and Corrections Technology Center, Colorado District Attorneys Council, Colorado Bureau of Investigation, Denver Police Department and the University of Denver, (From Crime Scene to Courtroom Program) "Forensic DNA Profiling: The Application of PCR and Gel Electrophoresis to Human Genetic Identity", Denver, Colorado.
- 2002 Four State Peace Officers Association, Farmington, New Mexico, Invited Lecturer: Bioterrorism: A Primer for First Responders.
- 2002 Leavenworth Police Department and Kansas City Kansas Community College, Kansas City, Kansas, Organizer/Instructor: From Crime Scene to Courtroom: DNA Workshop for Law Enforcement and Crime Scene Investigators

- 2002 Colorado Homicide Investigators Association, Denver, Colorado, Invited Lecturer: Bioterrorism: A Primer for First Responders.
- 2002 Northwest Colorado Emergency Preparedness Advisory Committee, Steamboat Springs, Colorado, Invited Lecturer: Bioterrorism: A Primer for First Responders.
- 2002 Wyoming State Police Academy, Douglas, Wyoming, Invited Lecturer: Bioterrorism: A Primer for First Responders.
- 2002 Federal Bureau of Investigation, InfraGuard and the National Law Enforcement and Corrections Technology Center, Securing the Rockies Conference, Denver, Colorado, Invited Lecturer: Bioterrorism: Bacterial and Viral Agent Threats.
- 2002 Overland Park, Police Department, 13<sup>th</sup> Annual Law Enforcement Executives Conference, Overland Park, Kansas, Invited Lecturer: Bioterrorism: Myths versus Facts .
- 2002 Missoula County Sheriff's Department and the University of Montana, Missoula, Montana, Organizer/Instructor: From Crime Scene to Courtroom: DNA Workshop for Law Enforcement and Crime Scene Investigators
- 2002 Norman Police Department, Oklahoma University Police Department and Oklahoma University, Norman, Oklahoma, Organizer/Instructor: From Crime Scene to Courtroom: DNA Workshop for Law Enforcement and Crime Scene Investigators
- 2002 Northern Colorado Peace Officers Association, Fort Collins, Colorado, Invited Lecturer: Bioterrorism: Facts versus Myths for First Responders.
- 2002 Council of Security and Strategic Technology Organizations, Washington D.C. Invited Lecturer: Bioterrorism: Facts versus Myths for First Responders.
- 2001 National Law Enforcement and Corrections Technology Center, Rocky Mountain Regional Advisory Council meeting, Albuquerque, New Mexico, Invited Lecturer: Bioterrorism: A Primer for First Responders.
- 2001 Colorado District Attorneys Council, University of Denver, Denver, Colorado Organizer/Instructor: Forensic DNA Workshop.
- 2000 Colorado District Attorneys Council, University of Denver, Denver, Colorado. Organizer/Instructor: Forensic DNA Workshop.

#### **E. Additional Professional Presentations, Contributed Papers and Posters and Invited Lectures**

##### **Forensic Science**

- 2016 "Hypergeometric Sampling: Introduction to a Statistically Valid Approach for Assessing Population Characteristics" 38th Annual SWAFS Conference, Southwestern Association of Forensic Scientists, Galveston, TX.
- 2016 "Uncertainty of Measurement for Weight Determinations when Extrapolating from a Sample" 38th Annual SWAFS Conference, Southwestern Association of Forensic Scientists, Galveston, TX.
- 2016 "Peak Height Considerations in Forensic DNA Typing: Developing Data Driven Interpretation Guidelines" Validation and Mixture Interpretation Standard Operating Procedures Workshop. 27<sup>th</sup> International Symposium on Human Identification. Minneapolis, MN



- 2015 "OSAC Overview Biology/DNA", Advanced Topics for Human Identification & Data Interpretation Workshop, The Center for Forensic Science Research & Education, Philadelphia, Pennsylvania.
- 2015 "Mixture Interpretation Workshop", Advanced Topics for Human Identification & Data Interpretation Workshop, The Center for Forensic Science Research & Education, Philadelphia, Pennsylvania.
- 2015 "Rigor in Mixture Validation Studies", Advanced Topics for Human Identification & Data Interpretation Workshop, The Center for Forensic Science Research & Education, Philadelphia, Pennsylvania.
- 2015 "Body Fluid Identification by Proteomics", Advanced Topics for Human Identification & Data Interpretation Workshop, The Center for Forensic Science Research & Education, Philadelphia, Pennsylvania.
- 2015 "Confirmatory Body Fluid Identification by Mass Spectrometry from Sexual Assault Evidence" 67th Annual Scientific Meeting of the American Academy of Forensic Sciences, Orlando, Florida.
- 2015 "Body Fluid ID by Mass Spectrometry" Green Mountain DNA Conference, Vermont Forensic Laboratory, Burlington, Vermont.
- 2014 "Scientific Rigor in Forensic Validation Studies", Advanced Topics for Human Identification & Data Interpretation Workshop, The Center for Forensic Science Research & Education, Philadelphia, Pennsylvania.
- 2014 "Application of Mass Spectrometry in Forensic Serology," Golden Helix Summer School: Pharmacogenomics and Genomic Medicine - Bridging Research and the Clinic, Golden Helix Foundation, Aegina, Greece.
- 2014 "Workflow and Data Analysis for a Q-TOF Based Human Blood Identification Assay", Technology Training Workshop, Agilent Technologies and Brasilia Police, Brasilia, Brazil.
- 2014 "Professional Ethics in the Forensic Sciences", National Medical Services Labs, Willow Grove, PA.
- 2012 "Quality Control in Forensic Laboratories", Applied DNA Sciences Inc., Stony Brook, NY
- 2012 "Interpreting Complex DNA Mixtures", National Medical Services Labs inc., Willow Grove, PA
- 2012 "Parentage and Reverse Parentage Testing", National Medical Services Labs inc. Willow Grove, PA
- 2012 "Unambiguous Identification of Sexual Assault Evidence: Development of a Unified Body Fluid Assay", 2012 End Violence Against Women International Conference, San Diego, CA
- 2012 "Validation of Highly-Specific Protein Markers for the Identification of Biological Stains – Adapting Proteomics to Forensics" Colorado Biological Mass Spectrometry Society Summer Meeting 2012, Boulder, CO
- 2012 "Development and Testing of a Rapid Multiplex Assay for the Identification of Biological Stains", Green Mountain DNA Conference, Department of Public Safety, Vermont Forensics Laboratory, Burlington, VT

- 2012 “Highly-Specific Protein Biomarkers for the Identification of Biological Stains” NIJ Annual Meeting 2012 - Turning to Science: Enhancing justice, Improving safety and Reducing costs National Institute of Justice, Arlington, VA
- 2011 “Highly-Specific Protein Biomarker Assays for the Identification of Biological Stains”, The National Institute of Justice Conference 2011 - Forensic DNA: Tools, Technology, and Policy. Washington, D.C.
- 2011 “Resolving mtDNA Mixtures by Denaturing HPLC and Linkage Phase Analysis”, The National Institute of Justice Conference 2011 - Forensic DNA: Tools, Technology, and Policy. Washington, D.C.
- 2011 “Highly-Specific Protein Markers for the Confirmatory Identification of Biological Stains” Invited Seminar, National Medical Services Labs, Willow Grove, PA.
- 2011 “Forensic DNA Profiling: The Science of Solving Crimes” Invited Public Science Seminar for The Amoco Oil Corporation Alumni Club, Denver, CO
- 2011 “The Real CSI: Using Modern Forensics to Solve the Most Challenging Cases” OLLI Summer Seminars of OLLI. Denver, CO.
- 2010 “Discovery and Validation of Highly Specific Protein Markers for the Identification of Biological Stains: Adapting Comparative Proteomics to Forensics” World HUPO, Sydney Australia. (Due to a schedule conflict, Kevin Legg was sent in my place to make this presentation).
- 2010 “Forensic Analysis of Human DNA in Criminal Investigations” Invited lecture at the University of Denver Law School.
- 2010 “Forensic DNA and Getting the Real Perpetrator?” First Year Seminar Program. University of Denver, Denver CO
- 2010 “Forensic DNA Profiling: The Science of Solving Crimes” Invited Public Science Seminar for Split Screen, Lakewood, CO
- 2010 “Forensic DNA in Court: Wrongful Conviction”, Dept. Sociology and Criminology. University of Denver, Denver CO
- 2010 “Forensic DNA and Getting the Real Perpetrator?” First Year Seminar Program. University of Denver, Denver CO
- 2010 “Resolving mtDNA Mixtures by Denaturing HPLC and Linkage Phase Analysis”, The National Institute of Justice Conference 2010 - Forensic DNA: Tools, Technology, and Policy. Washington, D.C.
- 2010 “Resolving mtDNA Mixtures by Denaturing HPLC and Linkage Phase Analysis”, Second Annual Current and Future Advances in Human Identification Conference Virginia Department of Forensic Science, Hampton, VA
- 2009 “Forensic DNA Outreach to the Law Enforcement Community through the National Law Enforcement and Corrections Technology Center” Presentation to Mr. Darek Newby senior member of the U.S. House appropriations. Denver, CO
- 2009 “An Introduction to the State of Forensic DNA Technologies” National Authority for Scientific Research, Center for Biotechnology Research, Tripoli, Libya
- 2009 “Emerging Proteomic Technologies for Identifying Human Tissues in Forensic Cases” National Authority for Scientific Research, Center for Biotechnology Research, Tripoli, Libya



- 2009 “New Approaches to Comparative Sequence Analysis for Missing Persons” National Authority for Scientific Research, Center for Biotechnology Research, Tripoli, Libya
- 2009 “Mitochondrial DNA Analysis for Analyzing Challenging Evidence and Cases” National Authority for Scientific Research, Center for Biotechnology Research, Tripoli, Libya
- 2009 Forensic Science in Libya: Training and Database Laboratory Implementation” National Authority for Scientific Research, Center for Biotechnology Research, Tripoli, Libya
- 2009: “DNA 101: Forensic DNA Profiling in Criminal Investigations” Regis College for Professional Studies. Denver, CO.
- 2009: “Mitochondrial DNA Analysis in Forensics” Forensic Science Education Conference. American Academy of Forensic Sciences and University of Colorado at Boulder. Boulder, CO
- 2009: “Isolation of Highly Specific Protein Markers for the Identification of Biological Stains: Adapting Comparative Proteomics to Forensics”, The National Institute of Justice Conference 2009, Washington, D.C.
- 2009: “Isolation of Highly Specific Protein Markers for the Identification of Biological Stains: Adapting Comparative Proteomics to Forensics”, 2nd Annual Green Mountain DNA Conference. Department of Public Safety, Vermont Forensic Laboratory. Burlington, VT
- 2008 The National Institute of Justice Conference 2008 - Forensic DNA: Tools, Technology, and Policy. “Isolation of Highly Specific Protein Markers for the Identification of Biological Stains: Adapting Comparative Proteomics to Forensics”, Washington, D.C.
- 2008 The National Institute of Justice Conference 2008 - Forensic DNA: Tools, Technology, and Policy. “Forensic mtDNA Mixture Analysis by Denaturing High-Performance Liquid Chromatography”, Washington, D.C.
- 2008 Rap Sheet “Advancements in Forensic Science and the Need for Preservation of Evidence.” Colorado Criminal Defense Bar Winter 2008. pp. 7-9.
- 2008 Regis College for Professional Studies “DNA 101: Forensic DNA Profiling in Criminal Investigations”. Denver, CO.
- 2008: DNA Forensics Technology Working Group, “Isolation of Highly-Specific Protein Markers for the Identification of Biological Stains: Adapting Comparative Proteomics to Forensics”, National Institute of Justice. Washington, DC
- 2008: “Forensic DNA in Court: Wrongful Conviction”, Invited talk by Dr. Scott Phillips, Dept. Sociology and Criminology. University of Denver, Denver CO
- 2008: “mtDNA Analysis and Mixture Resolution by Denaturing High-Performance Liquid Chromatography”, Invited talk, Vira Core Inc. Kansas City, MO
- 2008 DNA 101 and the Future of Forensic DNA. Colorado Association of Criminal Justice Educators, Denver, CO.
- 2008 Advancing Forensic DNA Analysis of Challenging Evidentiary Material: Resolving mtDNA Mixtures by DHPLC. Exempla St. Joseph’s Hospital, Denver, CO
- 2007 National Institute of Justice, “Isolation of Highly Specific Protein Markers for the Identification of Biological Stains: Adapting Comparative Proteomics to Forensics”, 8<sup>th</sup> Annual DNA Grantees’ Meeting. Arlington, VA.
- 2007 Advancing Forensic DNA Analysis of Challenging Evidentiary Material: Resolving mtDNA Mixtures by DHPLC. University of Northern Colorado, Greeley, CO

- 2006 Forensic Applications of Denaturing High-Performance Liquid Chromatography to mtDNA Analysis. National Institute of Scientific Investigation. Seoul, Republic of Korea.
- 2006 DNA Mixture Fractionation and Analysis by Denaturing High-Performance Liquid Chromatography. III International Symposium on Biochemistry and Molecular Biology; Federación Latinoamericana de Asociaciones Químicas. (Treasury Department License CT-8218) Havana, Cuba
- 2006 Forensic Applications of mtDNA Analysis and Denaturing High-Performance Liquid Chromatography. China Central Police Agency, Beijing, People's Republic of China.
- 2006 Forensic Applications of mtDNA Analysis and Denaturing High-Performance Liquid Chromatography. Shanghai Regional Police Agency, Shanghai, People's Republic of China.
- 2006 mtDNA Mixture Fractionation and Analysis by Denaturing High-Performance Liquid Chromatography. 85. Jahrestagung der Deutschen Gesellschaft für Rechtsmedizin und DNA in Forensics 2006. Innsbruck, Austria.
- 2006 Forensic Applications of mtDNA Analysis and Denaturing High-Performance Liquid Chromatography. Shenyang Regional Police Agency, Shengyang, People's Republic of China.
- 2006 University of Connecticut, Center for Applied Genetics and Technology, Department of Molecular and Cell Biology, "Forensic Analysis of mtDNA: Fractionating Mixtures by Denaturing High-Performance Liquid Chromatography", Storrs, CT.
- 2006 National Institute of Justice, "Forensic mtDNA Analysis and Mixture Separation by Denaturing High-Performance Liquid Chromatography", 7<sup>th</sup> Annual DNA Grantees' Meeting. Arlington, VA.
- 2006 Transgenomic Inc. "mtDNA Mixture Fractionation and Analysis by Denaturing High-Performance Liquid Chromatography", Omaha, NE.
- 2005 Mitotyping Technologies Incorporated, "mtDNA Mixture Fractionation and Analysis by Denaturing High-Performance Liquid Chromatography: Progress Report", State College, PA.
- 2005 National Institute of Justice, "mtDNA Mixture Fractionation and Analysis by Denaturing High-Performance Liquid Chromatography", Forensic DNA Research and Development Program Review Conference. Washington, DC.
- 2005 Louisiana State University Health Sciences Center "Rapid Mitochondrial DNA Analysis for Evidence Screening and Separation of Forensic Mixtures - An Academic Research Career in the World of CSI". Keynote Speaker for the Annual HSC Graduate Student Research Conference, Shreveport, LA.
- 2005 National Institute of Justice, "Forensic mtDNA Analysis and Mixture Separation by Denaturing High-Performance Liquid Chromatography", 6<sup>th</sup> Annual DNA Grantees' Meeting. Washington, DC.
- 2005 Mitotyping Technologies Incorporated, "Forensic Utility of Denaturing High-Performance Liquid Chromatography to Analyses of Human Mitochondrial DNA", State College, PA.
- 2005 Running Horse Farm Incorporated, "Resolving Errors in the American Stud Book through mtDNA Analysis of Thoroughbred Lineages", Albuquerque, NM.
- 2005 University of Denver, VIVA Program, "'The DNA Revolution: What Applied Biotechnology Can Do To You and For You.'", Denver, CO.

- 2004 National Institute of Justice, "mtDNA Analysis by DHPLC for the characterization and separation of mixtures in forensic samples", Forensic DNA Research and Development Program Review Conference. Washington, DC.
- 2004 Cambridge Healthtech Institute, "Human mtDNA Mixture Separation by Denaturing High-Performance Liquid Chromatography" DNA Forensics: Enabling Investigative Examination, 6th Biannual Meeting. McLean, VA. (Session Chair)
- 2004 Biological Sciences Curriculum Study, "The use of DNA profiling and Electrophoresis in Human Identification: Bringing it to the classroom", Keys to Science Institute for Professional Development, Colorado Springs, CO.
- 2004 National Institute of Justice, "Forensic mtDNA Analysis and Mixture Separation by Denaturing High-Performance Liquid Chromatography", 5th Annual DNA Grantees' Meeting. Washington, DC.
- 2004 National Law Enforcement and Corrections Technology Center and the National Institute of Justice, "Institute for Forensic Genetics - Program Overview", Denver, CO.
- 2004 15th International Symposium on Human Identification. Danielson, P.B., Kristinsson, R and LaBerge G.S. "Forensic mtDNA Analysis and Mixture Separation by Denaturing High-Performance Liquid Chromatography". Phoenix, Arizona.
- 2004 Alpha Epsilon Delta, "The use of DNA profiling and Electrophoresis in Human Identification", University of Denver, Denver, CO.
- 2003 Third European-American School in Forensic Genetics and Mayo Clinic Course in Advanced Molecular and Cellular Medicine. "Clinical Applications of Denaturing HPLC DNA Profiling". Zagreb, Croatia
- 2003 Third European-American School in Forensic Genetics and Mayo Clinic Course in Advanced Molecular and Cellular Medicine. "Rapid Mitochondrial DNA Profiling by Denaturing High Pressure Liquid Chromatography". Zagreb, Croatia
- 2003 Eleanor Roosevelt Institute & DU Life Sciences Joint Symposium. University of Denver, Denver, Colorado.
- 2003 Cirtoma Social Service Organization, "Guilty or Innocent: Forensic DNA in Human Identification", Englewood, Colorado.
- 2003 Sigma-Xi, "Mass Disasters and Sex Crimes: Forensic Analysis of Human Mitochondrial DNA", Scientific Honors Society University of Denver, Denver, Colorado.
- 2003 University of Denver Leadership Program, "Teamwork: Advancing Forensic DNA Analysis and Benefiting Our Community", University of Denver, Denver, Colorado
- 2003 University of Denver Alumni Association, "Molecular Biology, Criminal Justice and DU" Denver, CO.
- 2003 University of Denver, Nelson Hall Office of Residence, "Bioterrorism: Facts vs. Myths", University of Denver, Denver, Colorado
- 2003 Sun Yat-Sen University, Department of Forensic Science "Human Mitochondrial DNA Profiling by Denaturing High-Performance Liquid Chromatography", Guangzhou, Democratic Peoples Republic of China.
- 2003 Beckman-Coulter, Genetic Analysis Seminar, "DNA Sequencing: Throughput, Data Quality and Cost" University of California at Irvine, Irvine, CA.

- 2003 Beckman-Coulter, Genetic Analysis Seminar, “Advances in Mutation Discovery and Genetic Analysis”, Beckman-Coulter World Headquarters, Fullerton CA.

### **Molecular Toxicology**

- 2002 Beckman-Coulter, Genetic Analysis Seminar at the International Symposium of the Association of Biomolecular Resource Facilities, Austin, Texas
- 2002 Beckman-Coulter, Advanced Technology Seminar Series: Tools and Techniques for Functional Genomics. San Francisco, California
- 2002 Beckman-Coulter, Advanced Technology Seminar Series: Tools and Techniques for Functional Genomics. Seattle, Washington
- 2002 Beckman-Coulter, Genetic Analysis Seminar USDA-ARS Oregon State University, Corvallis, Oregon.
- 2001 Aachen University of Technology and Adolf Kühner AG, 2<sup>nd</sup> International Symposium on Applied Shaking Technology, New York, New York
- 1997 University of Arizona, Tucson, Arizona
- 1996 Japanese Society of Pharmacesthesiology, 18<sup>th</sup> Congress of the Japanese Society of Pharmacesthesiology, Tokyo, Japan.
- 1996 Saga National Medical University, Saga, Japan
- 1995 Metropolitan State College of Denver, Department of Biology, Denver, Colorado

### **Neuroendocrinology**

- 2002 Beckman-Coulter, Genetic Analysis Seminar at the 13<sup>th</sup> International Genome Sequencing and Analysis Conference, San Diego, California
- 2002 Beckman-Coulter, Genetic Analysis Seminar, Oregon Health & Science University (West Campus), Portland, Oregon.
- 2002 Beckman-Coulter, Genetic Analysis Seminar, Oregon Health & Science University (Marquam Hill Campus), Portland, Oregon.
- 2001 Beckman-Coulter, Genetic Analysis Seminar, Massachusetts Institute of Technology, Boston, Massachusetts
- 2001 Metropolitan State College of Denver. Department of Biology, Denver, Colorado
- 2001 Beckman-Coulter, Genetic Analysis Seminar, Research Triangle Park, North Carolina
- 2001 University of Camerino, International Symposium on Amphibian and Reptilian Endocrinology and Neurobiology, Camerino, Italy
- 1999 Hokkaido National University, Division of Biological Sciences, Graduate School of Science, Sapporo, Japan

## **F. Research Grants and Contracts**

1. "Validation of a Mass Spectrometry Based Serological Assay" Department of the Army, (PI: Kevin Legg, Co-PI Phillip B. Danielson). Full proposal submitted January 2015, (Duration = 10-01-15 to 9-30-17) Funded at \$789,298
2. "Developmental Validation of a High-Specificity Multiplex Assay for Human Body Fluid Identification" National Institute of Justice, (PI: Phillip Danielson). Full proposal submitted April 2012, (Duration = 10-01-12 to 9-30-14) Funded at \$576,428
3. "Validation of Highly-Specific Protein Markers for the Identification of Biological Stains", National Institute of Justice, (PI: Phillip Danielson). Concept paper submitted December 2008; Full proposal submitted April 2009, (Duration = 10-01-09 to 9-30-10) Funded at \$243,427
4. "Development of Linkage Phase Analysis Software for Resolving mtDNA Mixtures", National Institute of Justice, (PI: Phillip Danielson). Concept paper submitted December 2008; Full proposal submitted April 2009, (Duration = 10-01-09 to 9-30-10) Funded at \$42,646
5. "Isolation of Highly-Specific Protein Markers for the Identification of Biological Stains: Adapting Comparative Proteomics to Forensics", Submitted to National Institute of Justice, (PI: Phillip Danielson). Submitted February 2006, Funded at \$186,602 (Duration = 10-01-06 to 10-01-09)
6. "Independent Forensic Services", (PI: Phillip Danielson), Forensic Research and Development for Trace DNA Analysis and TOD Determination, Submitted December, 2008, Funded at \$87,832. (Duration = 01-01-08 to 12-31-10)
7. "Mitochondrial DNA Mixture Analysis by Denaturing High Performance Liquid Chromatography for the Screening of Forensic Evidence and the Fractionation of Mixtures in Forensic Samples" Submitted to National Center for Missing and Exploited Children, (PI: Phillip Danielson), Submitted September 2005, (Duration = 11-01-05 to 03-31-08) Funded at \$106,686
8. "Mitochondrial DNA Mixture Separation and Analysis by Denaturing High Performance Liquid Chromatography" Submitted to National Institute of Justice, (PI: Phillip Danielson), Submitted March 2005, Funded at \$254,549 (Duration = 09-01-05 to 08-31-06)
9. "Comparative Proteome Mapping of Body Fluids in Forensics" Beckman-Coulter ProteomeLab Collaborative Grant Program. Funded at \$20,000 (Duration = 01-01-05 to 12-31-05)  
"Mitochondrial DNA Analysis by Denaturing High-Performance Liquid Chromatography for the characterization and Separation of Mixtures in Forensic Samples" ", National Institute of Justice, (PI: Phillip Danielson), Funded at \$202,513, Duration = 09-01-03 to 05-31-05.
10. "Aquisition of a ProteomeLab PF2D System for Research and Education" National Science Foundation, (PI: Phillip Danielson, Co-PIs: Joseph Angleson, Miles Brennan, Christina Coughlin and Robert Does; Other Major Users: David Patterson and Anna Sher), Submitted January 2004, Funded at = \$147,080 (NSF Request = \$102,956; DU Cost Share = \$44,124), Duration = 08-01-04 to 07-31-07.
11. "Purchase of a MALDI-TOF Mass Spectrometer for Research and Education" National Science Foundation Chemistry Research Instrumentation and Facilities, Submitted July 2002, Budget Amount = \$318,500, Duration = 02-01-03 to 01-31-06. Funded at (NSF:\$199,250; DU: \$119,250).
12. "A WAVE Nucleic Acid Fragment Analysis System for Research and Education" National Science Foundation, Submitted October 2001, Budget Amount = \$153,280, Duration = 03-01-02 to 02-28-05, Funded at (NSF:\$107,296; DU: \$45,984)

13. "Deciphering the Evolution of the Opioid/Orphanin Gene Family", National Science Foundation, Submitted July 2001, Budget Amount = \$361,644, Duration = 01-01-02 to 12-31-05, Funded at \$239,986
14. "Molecular Genetics of the HPA(I) Axis", National Institutes of Health, Submitted January 2001, Budget Amount = \$131,390, Duration = 12-01-01 to 11-30-04, Funded at \$131,390.
15. "Acquisition of a Real-Time Quantitative PCR System for Research and Education", National Science Foundation, Submitted February 2000, Budget Amount = \$143,495, Duration = 08-01-01 to 07-31-04, Funded at \$143,495 (NSF:\$100,446; DU:\$43,049)
16. "Acquisition of an Automated DNA Sequencing and Sample Prep Core Unit for Research and Education", National Science Foundation, Submitted February 1999, Budget Amount = \$181,798, Duration = 07-15-99 to 07-14-01, Funded at \$181,798 (NSF:\$126,798; DU:\$54,342)
17. "Opioid-Coding Genes: Evolution in Lungfish and Amphibians", National Science Foundation, Submitted February 1997, Budget Amount = \$376,671, Duration = 07-01-98 to 06-30-02, Funded at \$327,356.
18. "Evolutionary Genetics of P450 Genes in Desert *Drosophila*", National Science Foundation, Submitted December 1997, Budget Amount = \$398,935, Duration = 07-01-98 to 06-31-03, Funded at \$270,000.

#### **I. Examples of Court Testimony (Expert Witness)**

- |      |  |
|------|--|
| 2016 | Garfield County District Court, sexual assault (expert in forensic genetics/biology)                                 |
| 2016 | Pueblo County District Court, sexual assault (expert in forensic genetics/biology; genetic relatedness)              |
| 2016 | Adams County District Court, arson (expert in molecular biology and forensic DNA analysis)                           |
| 2015 | US District Court for the District of Colorado, firearms possession (expert in forensic genetics/biology)            |
| 2015 | Denver County District Court, sexual assault (expert in forensic biology)  |
| 2015 | Jefferson County District Court, sexual assault (expert in forensic biology)   |
| 2014 | Adams County District Court, sexual assault (expert in molecular and forensic biology)                               |
| 2014 | Denver County District Court, sexual assault/murder (expert in molecular biology and forensic DNA analysis)          |
| 2013 | Archuleta County District Court, sexual assault/murder (expert in forensic biology)                                  |
| 2013 | Superior Court for the District of Columbia, sexual assault/murder (expert in forensic DNA analysis)                 |
| 2013 | Laramie County District Court, sexual assault sexual assault (expert in molecular biology and forensic DNA analysis) |



- 2013 Adams County District Court, sexual assault (expert in molecular biology and forensic DNA analysis)
- 2011 Larimer County District Court, sexual assault (expert in molecular biology and forensic DNA analysis)
- 2011 Pueblo County District Court, sexual assault (expert in molecular biology and forensic DNA analysis)
- 2010 Denver District Court, Sexual Assault Post Conviction Appeal (expert in molecular biology and forensic DNA analysis)
- 2007 Jefferson County District Court, Attempted murder (expert in molecular biology and Forensic DNA analysis)
- 2006 Jefferson County District Court, Murder (expert in molecular biology and Forensic DNA analysis)
- 2006 Denver District Court, Sexual Assault (expert in molecular biology and forensic DNA analysis)
- 2005 Larimer County District Court, DUID (expert in drug metabolism)
- 2005 Weld County District Court, DUI (expert in microbiology)

#### **H. Collaborators and Other Affiliations:**

##### **(i) Current and/or Previous Collaborators:**

Mitchell R. Morrissey (District Attorney, Denver), John Preist (Denver Police Department), Troy Krenning (Law Enforcement Program Manager, National Law Enforcement and Corrections Technology Center, Rocky Mountain Region), Pete Mang (Colorado Bureau of Investigation), Dr. David Sweet (Bureau of Legal Dentistry, University of British Columbia), Dr. Terry Melton (Mitotyping Technologies Inc), Dr. Sun Honyu (Department of Forensic Medicine, Sun Yat-sen University, Guangzhou, PR China) Gregory S. Laberge (Denver Police Department), Dr. Robert Does (University of Denver), Dr. JoAnne Simmons (Forensic Biology Division, Institute of Environmental Science & Research, Auckland, New Zealand), Dr. Christian Westring (NMS Labs, Willow Grove, PA), Breanna Meade (Applied DNA Sciences, Long Island, NY)

##### **(ii) Graduate and Post Doctoral Advisors:**

Graduate Advisor: Dr. Jim Fogleman (University of Denver)

Postdoctoral Advisor: Dr. Robert Does (University of Denver)

##### **(iii) Thesis Advisor and Postgraduate-Scholar Sponsor:**

###### **Graduate Students:**

Heather McKiernan Ph.D. student, Univ. of Denver

Richard Eikelenboom Ph.D. student, Univ. of Denver

Kevin Legg Ph.D., Univ. of Denver (Currently Research Scientist Center for Forensic Science Research and Education)

Richard Kristinsson Ph.D., Univ. of Denver (Currently Production Manager Kondria Inc.)

Christian Westring, Ph.D., Univ. of Denver (Currently Director of Criminalistics for NMS Labs, Pennsylvania)

Sarah Lewis, M.S. student, Univ. of Denver (Currently Agent in Charge, Colorado Bureau of Investigation Forensic DNA Laboratory)

Qi Wei, Ph.D. student, University of Denver (Currently Director of Molecular Diagnostics Laboratory at with The Children's Hospital, Denver)

Frank Conrad, MS Degree (Currently in industry)

Robert Shelton, MS student, (Currently a technician with Univ. of Colorado Health Sciences Center)

Erica Blight, MS Degree, (Currently in industry)

Rod Azadan, MS Degree, (Currently in industry)

Katelyn Voglezang, MS Degree, (Currently in industry)

Tina Yee, MS Degree, (Currently in industry)

**Postdoctoral Researchers:**

Joan Foster, Professor, Metropolitan State College of Denver, Denver, CO

Sun Honyu, Professor, Department of Forensic Medicine, Sun Yat-sen University, Guangzhou, PR China)

Kevin Legg Ph.D., Research Scientist Center for Forensic Science Research and Education, Willow Grove PA